# NASA selects new suborbital payloads, total tops 100 experiments

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NASA has selected 21 space technology payloads for flights on commercial reusable launch vehicles, balloons, and a commercial parabolic aircraft.

This latest selection represents the sixth cycle of NASA's continuing call for payloads through an announcement of opportunity. More than 100 technologies with test flights now have been facilitated through NASA's Space Technology Mission Directorate's Flight Opportunities Program.

"This new group of payloads, ranging from systems that support cubesats to new sensors technology for planetary exploration, represent the sorts of cutting-edge technologies that are naturally suited for testing during returnable flights to near-space," said Michael Gazarik, NASA's associate administrator for space technology in Washington. "NASA's Flight Opportunities Program continues to mature this key technology development pipeline link, thanks to America's commercial suborbital reusable vehicles providers."

Fourteen of these new payloads will ride on parabolic aircraft flights, which provide brief periods of weightlessness. Two will fly on suborbital reusable launch vehicle test flights. Three will ride on high-altitude balloons that fly above 65,000 feet. An additional payload will fly on both a parabolic flight and a suborbital launch vehicle, and another will fly on both a suborbital launch vehicle and a high-altitude balloon platform. These payload flights are expected to take place now through 2015.

Flight opportunities currently include the Zero-G Corporation parabolic airplane under contract with the Reduced Gravity Office at NASA's Johnson Space Center in Houston; Near Space Corp. high-altitude balloons; and reusable launch vehicles from Armadillo Aerospace, Masten Space Systems, UP Aerospace and Virgin Galactic. Additional commercial suborbital flight vendors under contract to NASA, including XCOR and Whittinghill, also will provide flight services.

Payloads selected for flight on a parabolic aircraft are:

- "Technology Maturation of a Dual-Spinning Cubesat Bus," Kerri Cahoy, Massachusetts Institute of Technology, Cambridge
- "Testing Near-Infrared Neuromonitoring Devices for Detecting Cerebral Hemodynamic Changes in Parabolic Flight," Gary Strangman, Massachusetts General Hospital, Boston
- "Resilient Thermal Panel: Microgravity Effects on Isothermality of Structurally Embedded Two Dimensional Heat Pipes," Andrew Williams, Air Force Research Laboratory, Albuquerque, N.M.
- "Wireless Strain Sensing System for Space Structural Health Monitoring," Haiying Huang, University of Texas, Austin
- "Monitoring tissue oxygen saturation in microgravity," Thomas Smith, Oxford University, United Kingdom
- "Testing the deployment and rollout of the DragEN electrodynamic tether for Cubesats," Jason Held, Saber Astronautics Australia Pty Ltd., Australia
- "Creation of Titanium-Based Nanofoams in Reduced Gravity for Dye-Sensitized Solar Cell Production," Kristen Scotti, Northwestern University, Evanston, Ill.
- "Testing a Cubesat Attitude Control System in Microgravity Conditions," Eric Bradley, University of Central Florida, Orlando
- "Demonstration of Adjustable Fluidic Lens in Microgravity,"

James Schwiegerling, University of Arizona, Tucson
- "Optical Coherence Tomography (OCT) in Microgravity," Douglas Ebert, Wyle Laboratories, Houston
- "DYMAFLEX: DYnamic MAnipulation FLight Experiment," David Akin of University, Maryland, College Park
- "Characterizing Cubesat Deployer Dynamics in a Microgravity Environment," Kira Abercromby, California Polytechnic State University, San Luis Obispo
- "Demonstration of Food Processing Equipment," Susana Carranza, Makel Engineering Inc., Chino, Calif.
- "Advanced Optical Mass Measurement System," Jason Reimuller, Mass Dynamix Inc., Longwood, Fla.

Payloads selected for flight on a suborbital reusable launch vehicle are:

- "Precision Formation Flying Sensor," Webster Cash, University of Colorado, Boulder
- "Navigation Doppler Lidar Sensor Demonstration for Precision Landing on Solar System Bodies," Farzin Amzajerdian, NASA's Langley Research Center, Hampton, Va.

Payloads selected for flight on a high altitude balloon are:

- "Planetary Atmosphere Minor Species Sensor," Robert Peale, University of Central Florida, Orlando
- "Satellite-Based ADS-B Operations Flight Test," Russell Dewey, GSSL Inc., Tillamook, Ore.
- "Low-Cost Suborbital Reusable Launch Vehicle (sRLV) Surrogate," Timothy Lachenmeier, GSSL Inc.
- One payload will be manifested on a parabolic aircraft and a suborbital reusable launch vehicle:
- "Real Time Conformational Analysis of Rhodopsin using Plasmon Waveguide Resonance Spectroscopy," Victor Hruby,

University of Arizona, Tucson.

One payload will be manifested on a suborbital reusable launch vehicle and a high altitude balloon:

- "Test of Satellite Communications Systems on-board Suborbital Platforms to provide low-cost data communications for Research Payloads, Payload Operators, and Space Vehicle Operators," Brian Barnett, Satwest Consulting, Albuquerque, N.M.

NASA manages the Flight Opportunities manifest, matching payloads with flights, and will pay for payload integration and the flight costs for the selected payloads. No funds are provided for the development of the payloads.

NASA's Space Technology Mission Directorate, is dedicated to innovating, developing, testing and flying hardware for use in the agency's future missions. The Flight Opportunities Program is managed at NASA's Dryden Flight Research Center in Edwards, Calif. NASA's Ames Research Center at Moffett Field, Calif., manages the technology maturation activities for the program.

For more information about NASA's Space Technology Mission Directorate and the Flight Opportunities Program, visit: www.nasa.gov/spacetech

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